91-02719/

WATER QUANTITY SURVEYS COST SHARING AGREEMENT

CANADA - PRINCE EDWARD ISLAND

ANNUAL REPORT 1989-90

AUGUST 1990

TO: MR. K. F. DesRoches
Administrator for Prince Edward Island

Mr. S. L. Penety
Administrator for Canada

In accordance with Article XII of the Memorandum of Agreement covering Water Quantity Surveys in the Province of Prince Edward Island, we submit herewith the annual report for fiscal year 1989-90.

Members of the Coordinating Committee

R.M. Francis
Member for Prince Edward Island
Charlottetown, P.E.I.

R. D. McBride
Member for Canada
Dartmouth, Nova Scotia

AUGUST 1990

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INTRODUCTION

The year ending March 31, 1990 was the fifteenth in which water quantity surveys in Prince Edward Island were conducted under a Memorandum of Agreement between the Federal and Provincial Governments.

The Agreement establishes the basis on which cooperative water quantity surveys are made. It is administered for Canada by the Regional Director of the Inland Waters Directorate and for Prince Edward Island by the Deputy Minister, Department of the Environment. A Co-ordinating Committee comprising the Chief, Water Resources Branch, Inland Waters Directorate, and the Director, Water Resources Branch, PEI Dept. of the Environment reports to the Administrators. It is the responsibility of the Co-ordinating Committee to prepare annually Schedules A and D for approval by the Administrators.

The Memorandum of Agreement includes four schedules:

1. Schedule A is a list of water quantity stations operated under the terms of the Agreement and their responsibility classification as: federal, federal-provincial or provincial.

2. Schedule B is a list of items that are to be included for cost sharing under the Agreement.

3. Schedule C details procedures for computing annual payments.

4. Schedule D provides a summary of annual payments.

Schedules A and D for 1989-90 are attached to this report in appendicies II and VII.

SUMMARY OF ACTIVITIES

The 1989-90 annual meeting of the Co-ordinating Committee for the Water Quantity Surveys Agreement was scheduled to meet in March 1990. With the new technicians' contract being ratified and with the potential serious repercussion on all agreements across Canada, it was decided to postpone the meeting until a common federal approach could be developed for presentation to the provinces and territories.

After a number of avenues were explored at the federal level to ease the impact of the unusally large increases in technicians' salaries on the provinces and territories, a set of options were agreed to. In the Atlantic Region an in-depth study took place on the activities of technicians on work outside the agreements on water quantity surveys. These activities included servicing real-time equipment at gauging stations, groundwater surveys, water quality surveys, snow and ice surveys, providing assistance in flow forecasting, maintaining meteorological sensors at gauging stations, and special surveys. The other point of focus was a reassessment of the classification of gauging stations to determine whether the provincial share of increased costs due to the elevated technicians' salaries could be reduced.

For Prince Edward Island after reviewing all work activities outside the Agreement a sizeable portion of technicians' salaries was deducted to account for these activities in developing the 1990-91 cost estimates. This enabled a realignment of station classifications, reducing the F4 category and strengthing the FP3, by moving the Brudenell River station to FP3. Following this, cost estimates for operating the hydrometric stations for 1990-91 were prepared. For expediency rather than convening a meeting of the Co-ordinating Committee in late May 1990, agreement on the cost estimates for 1990-91 was reached via telephone communications.

During 1989-90 thirteen hydrometric gauging stations were operated, designated as follows: Federal 5, Federal-Provincial 8. The Province paid $9,807 through Schedule "D" payments toward the $46,362 operational cost of these stations.

Major maintenance activities took place at the Wilmot River station where the tunnel liner well had been leaning for a number of years. The site was excavated, the well was plumbed and crushed rock was placed around the well and machine tamped. This work was undertaken in preparation for the planned replacement of the shelter in 1990-91 with a new shelter to house an automatic sediment sampler. Cost details for this project is shown on page no.5.

Two sediment monitoring stations were operated at the stations on the Wilmot River and Brudenell River. Operational costs for sediment were not shared with the Province.

During the regular visitation to the surface water stations, recorder charts from the nine Provincial groundwater wells were retrieved for processing. The Province paid a total of $2,691 for data processing costs associated with production of records for these stations. The listing of the nine groundwater stations appears with the Schedule "A" listing in Appendix II.

The Prince Edward Island evaluation of small water related networks was initiated. This study is attempting to integrate the evaluation and planning of surface water, groundwater , water quality and climate networks by determining the links between these networks.

On page no. 4 where the actual cost of hydrometric surveys is compared to the original estimates it is noted that a variance occurs in salaries. This variance is due to the intermin settlement of the technicians' contract where increases in salary including backpay well exceeded those estimated. Also, with the rather ambitious major maintenance program the estimates for equipment and materials were exceeded. This led to a significant increase in actual costs over estimates for hydrometric surveys in Prince Edward Island.

In view of the fact that 15 years under the Water Quantity Surveys Agreement in Prince Edward Island have been completed, it was decided to compare the increases in operational costs under the Agreement to the National consumer cost index. Cost indices (with 1986 base year equal to 100) were obtained from Statistics Canada for each year back to 1975. These data were adjusted to a base of 100 for 1975. (see page no.12). The average costs of operating a hydrometric gauging station for each year over the 15 years were compiled and relatively adjusted such that the average cost for the first year of the Agreement, 1975-76, was set equal to 100. (see page no.12). These data were plotted and from the graphic that appears on page no.13, it can be observed that increases in average station operating cost have not followed the National inflationary trends. Operating costs have been somewhat suppressed over the later years which is an indication of the efficient manner of operating the stream gauging network. As average station operating cost is strongly tied to the salaries of technical staff, then with the upgrading of salaries for 1990-91, it may be expected that average station operating cost will climb.

WATER QUANTITY SURVEYS

PROVINCE OF PRINCE EDWARD ISLAND

1989-90

OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

	Estimated	Actual
Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technicians including overtime - 0.667 Technician 0.15 Supervisor)	$30,100	31,602
Transportation and Communications		
Travel and Removal - 04	1,200	1,380
Transportation and Postage - 06	300	125
Telecommunications - 08	-----	-----
Professional and Special Services		
Professional Services - 11	900	270
Other Services - 15	300	598
Rentals		
Rentals - 16	200	80
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 17	400	1,466
Building and Structures Repairs - 18	-----	1,044
Utilities, Materials and Supplies		
Public Utility Services - 19	-----	-----
Purchased Materials - 20	3,000	3,631
Parts and Consumable Tools - 21	700	725
Other Costs - Data Processing	1,500	1,425
- Depreciation of Vehicles(1)	2,500	2,523
- Depreciation of Field Equipment and Instruments	1,400	1,493
TOTAL	$42,500	$46,362

MAJOR MAINTENANCE PROJECTS

PRINCE EDWARD ISLAND

1989-90

STATION	PROJECT	COSTS	
Wilmot River near Wilmot Valley	Plumb stilling well	Gravel, backhoe & tamper	$1,044

WATER QUANTITY SURVEYS

PROVINCE OF PRINCE EDWARD ISLAND

SUMMARY OF ANNUAL COSTS AND PAYMENTS RECEIVED - 1989-90

HYDROMETRIC SURVEYS

Number of Gauging Stations Operated - 13

Designation of stations		
	F1	1
	F4	4
	FP	6
	FP3	2
		13

Average Cost of Gauging Station = $46,363/13 = $3,566

Actual Provincial Share of Operational Costs

50% of (($3,566 x 4/2) + ($3,566 x 4/2 x 0.5*))	$10,698
Provincial Payment Received Per Schedule "D"	$ 9,807

SEDIMENT SURVEYS

No cost shared sediment surveys

GROUNDWATER CHART PROCESSING

Processing charge $299 per station cost of 9 stations = 9 x $299	$ 2,691
Provincial Payment Received per Schedule "D"	$ 2,691

TOTALS

Total Actual Provincial Share of Cost ($10,698 + 2,691)	$13,389
Total Provincial Payment Received per Schedule "D" ($9,807 + 2,691)	$12,498

* Four of the six FP2 stations are operated as manual miscellaneous stations (0.5 unit cost).

Province/Territory: PRINCE EDWARD ISLAND

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1989-90

No. of Stations			Changes during 1989-90		Stn. Designation April 1, 1989			
April 1 /88	April 1 /89	Change	Added	Discontinued	Fed.	F P	Prov.	Contrib.
13	13	0	0	0	* 5 (2)	* 8	* 0	0

* Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1/75 - April 1, 1989

Federal Stations			F P Stations			Provincial Stations			Total Stations		
Apr 1 75	Apr 1/89	Chge	Apr 1 75	Apr 1/89	Chge	Apr 1 75	Apr 1/89	Chge	Apr 1/75	Apr 1/ 89	Chge
12	5	7	0	8	8	0	0	0	12	13	1

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1989-90

F-1	F-2	F-3	F-4	Total F	FP-1	FP-2	FP-3	Total F/P	P-1	P-2	Total P	Contributed	Total-All
1 (1)	0	0	4 (1)	5 (2)	0	6	2	8	0	0	0	0	13 (2)

Bracket Sediment Stations in all catagories

Province: PRINCE EDWARD ISLAND

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1989-90
(× $1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
1.4	59.6	19.4	23.0	102.0	0.8	31.6	14.8	0	46.4	35.7	10.7

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D/F - 1989-90

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
9 807	0	9 807	0	9 807

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1989-90
(Dollars)

Salary & Operations		Construction		Total			Annual Payment Received	Received Minus Actual
Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Difference		
9 807	10 698	0	0	9 807	10 698	891	9 807	-891

SUMMARY OF ANNUAL COSTS AND PAYMENTS

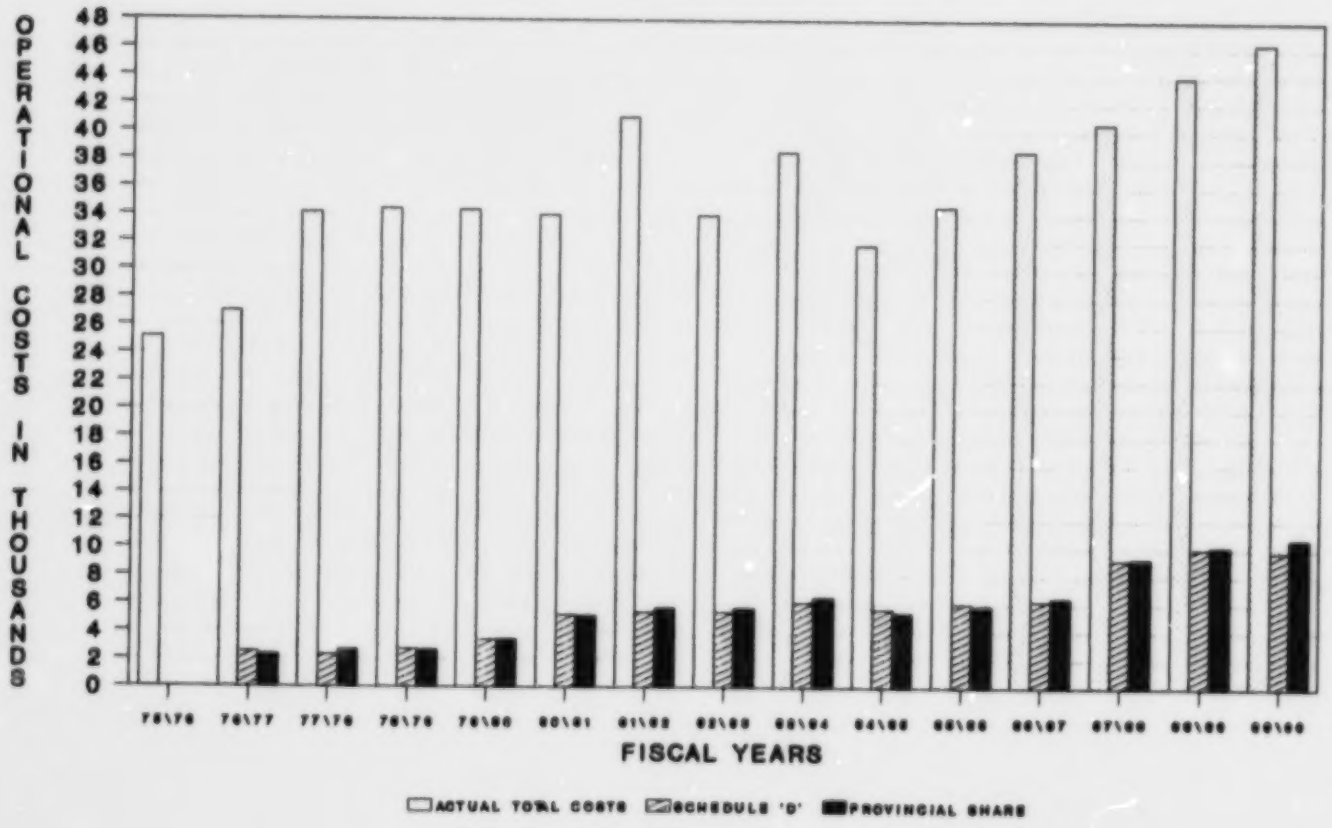
1975-76 TO 1989-90

PRINCE EDWARD ISLAND

	SCHEDULE "D"				ACTUAL PROVINCIAL SHARE				
YEAR	HYDROMET	SEDIMENT	CONSTR	TOTAL	HYDROMET	SEDIMENT	CONSTR	TOTAL	+CREDIT/DEBIT-
1975-76	0	-	-	0	0	-	-	0	0
1976-77	2,460	-	-	2,460	2,325	-	-	2,325	+135
1977-78	2,290	-	-	2,290	2,620	-	-	2,620	-330
1978-79	2,685	-	-	2,685	2,648	-	-	2,648	+37
1979-80	3,411	-	-	3,411	3,432	-	-	3,432	-21
1980-81	5,190	-	-	5,190	5,094	-	-	5,094	+96
1981-82	5,777	-	-	5,777	6,156	-	-	6,156	-379
1982-83	5,373	-	-	5,373	5,669	-	-	5,669	-296
1983-84	6,072	-	-	6,072	6,424	-	-	6,424	-352
1984-85	5,594	-	-	5,594	5,295	-	-	5,295	+299
1985-86	6,017	-	-	6,017	5,766	-	-	5,766	+251
1986-87	6,234	-	-	6,234	6,434	-	-	6,434	-200
1987-88	9,207	-	-	9,207	9,309	-	-	9,309	-102
1988-89	10,014	-	-	10,014	10,155	-	-	10,155	-141
1989-90	9,807	-	-	9,807	10,698	-	-	10,698	-891
								NET	-1,894

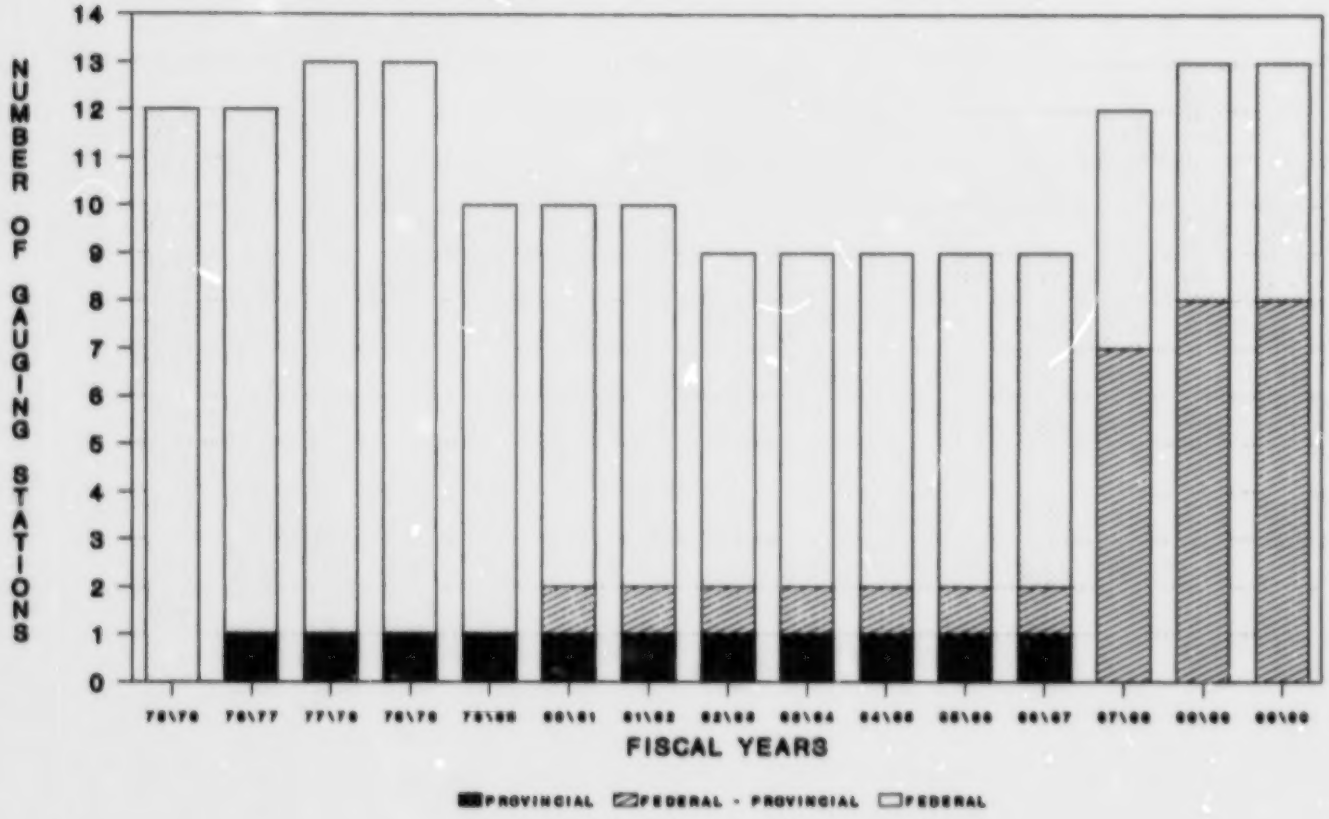
WATER QUANTITY SURVEYS

PRINCE EDWARD ISLAND
OPERATIONAL COSTS



WATER QUANTITY SURVEYS

PRINCE EDWARD ISLAND
GAUGING STATIONS OPERATED



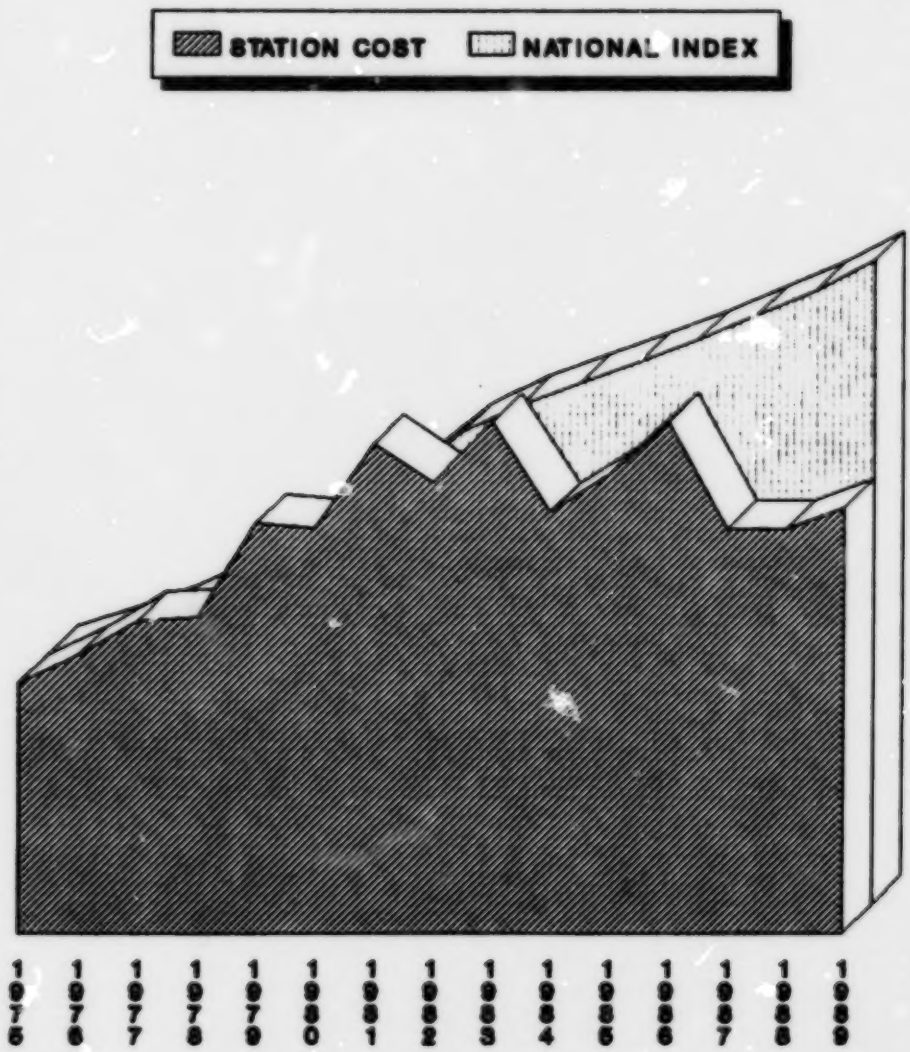
STATISTICS CANADA DATA

	Annual Average Cost Indicator (based on 1986)	Cost Indicator (adjusted to 1975)
1975	44.2	100.0
76	47.5	107.5
77	51.3	116.1
78	55.9	126.5
79	61.0	138.0
80	67.2	152.0
81	75.5	170.8
82	83.7	189.4
83	88.5	200.2
84	92.4	209.0
85	96.0	217.2
86	100.0	226.2
87	104.4	236.2
88	108.6	245.7
89	114.0	257.9
90	119.8 (To July 90)	

PRINCE EDWARD ISLAND
AVERAGE STATION OPERATING COST

YEAR	NO. STATIONS	AVERAGE COST	AVERAGE COST BASE 100 1975-76
1975-76	12	2,092	100.0
77	12	2,325	111.1
78	13	2,620	125.2
79	13	2,648	126.6
80	10	3,432	164.0
81	10	3,396	162.3
82	10	4,104	196.2
83	9	3,779	180.6
84	9	4,283	204.7
85	9	3,530	168.7
86	9	3,844	183.7
87	9	4,289	205.0
88	12	3,385	161.8
89	13	3,385	161.8
90	13	3,566	170.5

COST TREND ANALYSIS
STATION COST vs NATIONAL INDEX
PRINCE EDWARD ISLAND



APPENDIX 1

MEMORANDUM OF AGREEMENT

(Sample only)

MEMORANDUM OF AGREEMENT made this twenty-eighth day of January, 1975,

BETWEEN:

The Government of Canada, hereinafter called "Canada", represented by the Minister of the Environment

OF THE FIRST PART

- and -

The Government of the Province of Prince Edward Island, hereinafter called the "Province" represented by the Minister responsible for Environmental Control

OF THE SECOND PART

WHEREAS co-operative water quantity surveys have been carried on for many years under various informal federal-provincial agreements in the Provinces of Canada by the Water Survey of Canada of the Department of the Environment, for the purpose of securing co-ordinated and standardized basic data to facilitate resource planning and management in general and the design and implementation of projects related to navigation, hydro-electric development, irrigation, drainage, flood control, recreation, domestic and industrial water supply and other purposes;

AND WHEREAS the Governor-in-Council has by Order-in-Council NO. PC 1975-1/172 dated January 28, 1975, authorized the Minister of Environment to execute this agreement on behalf of Canada, subject to funds being voted by the Parliament of Canada;

AND WHEREAS the Lieutenant Governor in Council has, by Order-in-Council No. M7-74 dated January 23, 1975, authorized the Minister responsible for Environmental Control to execute this agreement on behalf of the Province subject to funds being voted by the Legislative Assembly.

NOW THEREFORE this agreement witnesseth that water quantity surveys in the Province and the financing thereof shall be continued and maintained upon the following basis; -

INTRODUCTION

DEFINITIONS

a) **ANNUAL PAYMENT** - a sum, agreed to by both parties in advance of the fiscal year, which shall represent the costs of operation and construction of water quantity survey stations.

b) **CONSTRUCTION** - includes the construction of new water quantity survey stations and the maintenance, repair and reconstruction of existing water quantity survey stations.

c) **CONSTRUCTION PERSONNEL** - includes foremen and labourers on full time duty as well as engineering and technical staff on part time supervisory duty or reconnaissance assignment.

d) **FIELD PERSONNEL** - includes hydrometric supervisors and field technicians on full time duty as well as engineering and technical staff on temporary assignment.

e) **NETWORKS** - an original system of gauging stations for collection of water quantity survey data.

f) **OPERATING PARTY** - either party to this agreement which operates water quantity survey data.

g) **PUBLISHED DATA** - includes streamflow, water level and sediment data. The data is to be available in publications and computer compatible data files.

h) **SEDIMENT STATIONS** - any location where surveys are undertaken to collect data on suspended sediment or bed material or bed load data singly or in combination. Water temperature data is to be collected.

i) **WATER QUANTITY SURVEY STATIONS** - any location where surveys are undertaken to collect streamflow or water level or suspended sediment or bed material or bed load data singly or in combination. Water temperature data may be collected.

OPERATIONAL CONSIDERATIONS

ARTICLE I

Each water quantity survey station presently in operation has been identified according to the designation federal, federal-provincial or provincial. The current designation is given in Schedule A, hereto attached. Schedule A may be revised to include a change in the designation of a station, the addition of new stations or the deletion of stations as agreed by the Co-ordinating Committee (Article XII) and approved by the officials named in Article XIII.

ARTICLE II

Canada will construct and operate and pay the cost of construction and the annual cost of operation of water quantity survey stations which have been designated as federal. Where Canada deems it desirable in the interest of efficiency of operation, the Province may be requested to construct and operate some federal water quantity survey stations. If the Province agrees to such arrangements, Canada would in such cases reimburse the Province for the cost of construction and annual cost of operation in accordance with Article VI.

ARTICLE III

Where Canada constructs and operates water quantity survey stations designated as federal-provincial, the Province will reimburse Canada for 50% of the construction costs and 50% of the annual cost of operation. Where the Province constructs and operates these stations, Canada will reimburse the Province for 50% of the construction costs and 50% of the annual cost of operation in accordance with Article VI.

ARTICLE IV

If requested by the Province, Canada will construct and operate water quantity survey stations designated as provincial provided the Province reimburses Canada for 100% of the construction cost and annual cost of operation. If the Province constructs and operates these stations the Province will assume 100% of the annual cost of construction and operation in accordance with Article VI.

ARTICLE V

a) The operating party shall provide the staff to meet its responsibilities under this agreement.

b) Canada will at its own expense publish data from stations that it operates. Canada will on request at its own expense, publish data from stations operated by the Province providing the data meets national standards.

c) Water quantity surveys under this agreement shall be carried out to national standards in field procedures, equipment and instrumentation, data compilation and will use national guidelines for station designations. Such standards and guidelines shall be developed and maintained by Canada in consultation with all of the Provinces.

d) Canada and the Province shall work together to take advantage of technological advancements which improve the quality of data and the efficiency of standard procedures and to develop methods and techniques to assist in planning water quantity survey networks.

e) Canada at its own expense will provide calibration service for water quantity survey velocity instruments for both parties.

FINANCIAL CONSIDERATIONS

ARTICLE VI

a) Procedures for computing the annual payment are given in Schedule C.

b) The annual payment for 1975-76 is set out in Schedule D. The annual payment for subsequent years shall be determined according to the terms of this agreement and the procedures as set out in Schedule C.

c) Annual operation costs, except for sediment stations, will be computed using average annual water quantity survey station costs and the number of stations to be operated. The average annual water quantity survey station costs shall be recomputed annually according to the items listed in Schedule B.

d) Annual construction costs, except for sediment stations, will be the cost of constructing new water quantity survey stations plus repairs to and major reconstruction of existing water quantity survey stations.

e) The annual operation costs for sediment stations will be the summation of the individual station operation costs.

f) The annual construction costs of sediment stations will be the cost of constructing new sediment stations plus repairs to and major reconstruction of existing stations.

ARTICLE VII

a) The party operating the water quantity survey stations in accordance with Articles II, III and IV, will be responsible for providing and paying the total cost of water level recording equipment.

b) All costs associated with the purchase, installation and operation of specialized water quantity survey equipment will be paid for by the party or parties requiring the service.

ARTICLE VIII

Canada or the Province, depending on the operating responsibilities, shall submit invoices for one-quarter of the annual payment on July 1st., October 1st., January 1st. and March 1st. of each fiscal year in accordance with the annual payment set out in Schedule D. Payment is to be made as soon as possible after receipt of each quarterly claim but in no case later than March 31st. of each year.

ARTICLE IX

Except as agreed by the parties hereto where both parties have an interest, either operational or financial, the annual net change in the total number of water quantity survey stations, including federal, federal-provincial and provincial, as set out in Schedule A, is not to exceed 6% in any year.

ARTICLE X

Each party constructing or operating a water quantity survey station or stations shall keep complete records of all shareable expenditures made pursuant to this agreement and shall support such expenditures with proper documentation. Canada and the Province upon request shall make these records and documents available to auditors appointed by each other.

CO-OPERATION

ARTICLE XI

There shall be a free exchange of water quantity survey data between Canada and the Province. The party operating the water quantity survey station shall retain originals or a microfilm copy of observations, measurements, recorder charts and computations and these are to be available to the the other party on request.

CO-ORDINATION

ARTICLE XII

The officials named in Article XIII shall establish a Co-ordinating Committee representing each of the parties affected by this agreement. The Co-ordinating Committee shall be responsible for:

a) Planning and the continuing review of water quantity survey networks, including addition and deletion of all stations within Provincial boundaries.

b) Determining and reviewing the designation of water quantity survey stations using national guidelines which may from time to time be changed, subject to ratification by Canada and all of the Provinces.

c) Assuring the maintenance of standards in procedures, data compilation and instrumentation.

d) Reviewing annual operating costs and establishing average annual station costs, as per Article VI, for revision of Schedule D.

e) Preparation annually of new Schedule A and D which with the approval of the officials named in Article XIII would apply for the second and each subsequent year of the agreement.

The committee shall meet at least once a year and shall report to the officials named in Article XIII.

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

This agreement is to be administered for Canada by the Regional Director of the Inland Waters Directorate located at Halifax, Nova Scotia, and for the Province by the Chairman, Environmental Control Commission, located at Charlottetown, Prince Edward Island.

IMPLEMENTATION

ARTICLE XIV

The parties hereto agree that water quantity surveys will be carried out at indicated in Article I to XIII inclusive and the Schedules attached hereto.

PERIOD OF AGREEMENT

ARTICLE XV

This agreement shall become effective and binding on the parties upon the first day of April, 1975.

The agreement may be terminated by Canada or the Province on March 31st of any year provided that eighteen (18) months notice in writing is given. The agreement may be revised with the consent of the Governor-in-Council and the Lieutenant Governor-in-Council.

IN WITNESS WHEREOF the Honourable Jeanne Sauve, Minister of Environment has hereunto set her hand on behalf of Canada, and the Honourable Glen M. Bagnell, Minister of Environment has hereunto set his hand on behalf of the Province of Nova Scotia.

Signed on behalf of Canada)
by the Honourable Jeanne Sauve)
Minister of Environment)....................

IN THE PRESENCE OF)

.....)

Signed on behalf of the Province of)
Prince Edward Island by the Honourable)
Gilbert R. Clements, Minister responsible)....................
for Environmental Control)

IN THE PRESENCE OF)

)
)
.....

APPENDIX II

SCHEDULE A

WATER QUANTITY SURVEY STATIONS

SCHEDULE "A" RESPONSIBILITY CLASSIFICATION PRINCE EDWARD ISLAND
1989-90

FEDERAL 1 FEDERAL DEPARTMENTAL PROGRAMS

STA. NO.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
01CB004	WILMOT RIVER NEAR WILMOT VALLEY	1972	45.4	Q R C	SED TYP

FEDERAL 4 NATIONAL WATER QUANTITY INVENTORY

STA. No.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
01CE004	BRUDENELL RIVER AT BRUDENELL	1979	33.1	Q R C	SED
01CA003	CARRUTHERS BROOK NEAR ST. ANTHONY	1961	46.8	Q R C	WQ LRTAP
01CB002	DUNK RIVER AT WALL ROAD	1961	114	Q R C	REG61 WQ LRTAP
01CD003	MORELL RIVER AT BANGOR	1964	147	Q R C	REG64 WQ

FEDERAL-PROVINCIAL 2 RIVER BASIN MANAGEMENT

STA. NO.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
01CD004	BOUGHTON RIVER BELOW WHITLOCKS POND	1988		Q M M	
01CE006	CARDIGAN RIVER ABOVE CARDIGAN	1988		Q M M	
01CC006	CLYDE RIVER NEAR CLYDE RIVER	1986	26.8	Q M M	
01CE005	MONTAGUE RIVER NEAR HEAD OF MONTAGUE	1987	44.4	Q M M	
01CC003	WINTER RIVER AT BRACKLEY WELLS PUMPING STATION	1968	4.92	Q R C	REG68
01CC002	WINTER RIVER NEAR SUFFOLK	1967	37.5	Q R C	REG67

FEDERAL-PROVINCIAL 3 REGIONAL WATER QUANTITY INVENTORY

STA. NO.	STATION NAME	ESTAB.	D.A.	RECORDS	REMARKS
01CB006	EMERALD BROOK NEAR EMERALD	1974	5.59	Q R C	
01CC005	WEST RIVER AT RIVERDALE	1986	35.1	Q R C	

PROVINCIAL GROUNDWATER STATIONS
FOR WHICH DATA PROCESSING CHARGES ARE RECOVERABLE
PRINCE EDWARD ISLAND
1989-90

Station Number	Name
91CA001	Bloomfield GW
91CA002	Mt. Pleasant GW
91CB001	Kensington GW
91CC001	Auburn GW
91CC004	New Dominion GW
91CC005	Brackley Wells GW
91CC006	Airport No. 7 GW
91CD001	St. Charles GW
91CE001	Caledonia GW

EXPLANATION OF SYMBOLS & ABBREVIATIONS

TYPE OF RECORD

H _ water level data

Q - flow data

TYPE OF GAUGE

M - manual gauge

R - automatic recording gauge

OPERATION SCHEDULE

C - continuous record

M - miscellaneous record

S - seasonal record

REMARKS

DCP - data collection platform

LRTAP - samples collected for acid precipitation monitoring

REG - regulated flow

REG78 - regulated flow since 1978

SED - sediment data currently being collected

TYP - typical stream; data used to produce statement on runoff conditions

WQ - samples collected for water quality national overview network

APPENDIX III

NATIONAL GUIDELINES FOR DESIGNATION

WATER QUANTITY SURVEY STATIONS

October 20, 1982

NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS

These national guidelines of the Federal-Provincial Memoranda of Agreement for Water Quantity Surveys have been prepared by Canada in consultation with the Provinces for the purpose of designating federal, federal-provincial and provincial water quantity survey stations. In compliance with the agreements, the assignment and review of station designations is the responsibility of each Co-ordinating Committee.

The intent of these guidelines is to provide a uniform and consistent manner for designating water quantity survey stations throughout Canada. In these guidelines, "water quantity survey stations" have the same definition as in the Memoranda of Agreement and include water level, streamflow and sediment survey stations. The word "station" in these guidelines means "water quantity survey stations". Where not otherwise specified the word "Province" means "Province" or "Territory". The designation of each sediment station can be considered separately from the corresponding water quantity survey station designation.

FEDERAL STATIONS

There are stations that support programs of primary interest to the Government of Canada. These stations are funded 100 per cent by Canada in accordance with Article II and the procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E,D, and F for Quebec) of the Memoranda of Agreement.

1. Federal Department Programs

   These are stations required under statutory obligations that have developed in response to federal legislation and priorities, and as a result of programs of various federal government departments or agencies to provide quantity information on inland waters. These include stations operated in support of specific federal works, benchmark basins, studies or investigations, research projects, and to meet navigational requirements and management responsibilities. A station may be so designated where Canada has formally accepted responsibility for the continued operation of the station under an implementation agreement.

2. Interprovincial Rivers

   These are stations required for monitoring of waters flowing across or forming part of provincial or territorial boundaries where federal responsibility has been established by an agreement or where justified by an inter-jurisdictional concern.

3. International Waters

These are stations associated with federal responsibilities arising from international agreements, treaties, orders or studies. These include:

a) Stations specifically named under the Boundary Waters Treaty and those approved officially as "International Gauging Stations".

b) Stations specifically stipulated under IJC orders, or required to support such orders; to provide for control of waters crossing or forming part of the international boundary and for IJC related study, surveillance, flow regulation or appointment purposes. Such stations may also be required for similar studies carried out under unilateral or bilateral mechanisms and undertaken in anticipation of the need for formal orders.

c) Stations related to international treaties and agreements which involve waters crossing or forming part of the international boundary and which specifically stipulate the reaches of streams required to be monitored or special arrangements that need to be made to meet water quantity survey needs.

d) Stations on streams flowing across or forming part of the international boundary for which Canada has determined that monitoring is required for water management purposes.

4. National Water Quantity Inventory

These are stations that provide information for a national inventory of surface waters. They consist of those stations required to determine water quantity trends in the major drainage basins in Canada that serve to provide an assessment of the total surface water resources and to measure significant discharge to the oceans.

FEDERAL-PROVINCIAL AND/OR FEDERAL-TERRITORIAL STATIONS

These are stations that support programs of joint interest to Canada and the Province. The construction and operation of these stations are funded in accordance with Article III and procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E, D and F for Quebec) of the Memoranda of Agreement.

1. Federal-Provincial Agreement

These are stations where joint federal and provincial (or territorial) responsibility is established under the terms and conditions of an agreement between Canada and one or more Province or Territories.

The joint funding arrangements for any particular agreement must be taken into consideration before designating a station in order to ensure the intended division of financial responsibility. Following the completion of federal-provincial water study, a station may be designated in this category only if its continuation would be in the joint interest of Canada and the Province.

2. River Basin Management

These are stations where both Canada and the Province have stated an interest in the need for information to support the management of the

water resources of a river basin.

3. Regional Water Quantity Inventory

These are stations that provide an assessment of the quantity of water resources available in distinct hydrologic zones within each Province through representative sampling taking into consideration climatic variability, geographic and geologic differences, levels of population and development, basin size, streamflow regime, relationship to major groundwater resources and length of record.

PROVINCIAL AND/OR TERRITORIAL STATIONS

These are stations that support programs of primary interest to a Province. They are funded 100 per cent by the Province in accordance with Article IV and procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Provincial Department Programs

These are stations required strictly for provincial programs where water quantity information on inland waters is needed.

2. Specific Purpose Monitoring Requirements

These are stations established as a result of specific requests of provincial/territorial agencies, municipalities, or non-government organizations. All such requests shall be referred to the Province for screening and funding arrangements before being presented to the applicable Co-ordinating Committee.

CRITERIA FOR DESIGNATING STATIONS

UNDER GUIDELINE FEDERAL 4

NATIONAL WATER QUANTITY INVENTORY

1. Stations established on the main stem of large rivers discharging directly to the oceans as defined in the Hydrologic Atlas of Canada as those whose mean annual flow at the outlet of the river basin exceeds 400 m^3/sec.

2. Stations established on rivers for the purpose of determining water quantity trends or those located on rivers contributing discharge to the oceans whose mean annual flow at the mouth of the river is at least 85 m^3/sec.

3. Stations established for the purpose defined above whose drainage areas are greater than 200 km^2.

4. Stations of drainage area less than 200 km^2 may be established on rivers to determine discharge to the ocean and/or to assess the total water resource available in major hydrologic and climatic zones which are defined as follows:

   Island Provinces - P.E.I. and Newfoundland,
   Islands forming integral parts of Provinces/Territories,
   Major Peninsulas
   Distinctly identified hydrologic and/or climatic zones.

   The density of such stations shall be limited to those determined by official scientifically conducted station network analysis as required to determine the desired hydrologic parameters of the major geographical zones within the Province, Territory or Region.

APPENDIX IV

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

The items to be included in computing the annual payments of water quantity survey stations are:

I. OPERATIONAL COSTS WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

a) Salaries and overtime of field personnel and casual labour;

b) Field travel expenses, board and lodging costs for field personnel;

c) The computer costs associated with computing daily mean hydrometric data;

d) Observer pay;

e) Depreciation, operation and maintenance of vehicles and boats;

f) Maintenance of gauging station structures including material and labour for minor repairs;

g) Maintenance and depreciation of all field equipment and instruments (except as noted in Article VII of this agreement);

h) Fuels such as propane for heating recorder installations and gas such as nitrogen for operating pressure sensing equipment, electricity charges;

i) Rental of aircraft, vehicles, boats, etc., supplied by either party or chartered;

j) The annual cost of land leases;

k) Services, e.g. cost of establishing gas caches, operation of line cabins, etc.

II. OPERATIONAL COSTS SEDIMENT STATIONS

All items in I OPERATIONAL COST plus:

1) The computer costs associated with computing daily mean sediment data;

2) Cost of analysis of sediment samples.

III. NEW CONSTRUCTION REPAIR AND MAJOR RECONSTRUCTION COSTS FOR WATER QUANTITY SURVEY STATONS:

a) Salaries and overtime of construction personnel;

b) Field travel expenses, board and lodging costs of construction personnel;

c) Depreciation, operation and maintenance of vehicles;

d) Construction materials;

e) Maintenance, depreciation and operation of construction equipment;

f) Rental of aircraft, vehicles, boats, construction equipment, etc. supplied by either party or chartered;

g) Land acquisition costs including legal survey costs;

h) Construction contract payments.

APPENDIX V

PROCEDURE FOR APPLICATION OF SCHEDULE B TO THE ATLANTIC REGION AGREEMENTS

PROCEDURE FOR

APPLICATION OF SCHEDULES B AND C TO THE

ATLANTIC REGION AGREEMENTS

The procedures used by Water Resources Branch, Atlantic Region, to determine operational costs under the Water Quantity Surveys Cost Sharing Agreements are based on the financial system called AFMAS. Under this system, costs are divided into various object groups (01 to 25) and coded accordingly, by province.

SCHEDULE B

I. OPERATIONAL COSTS - WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

Objective Groups 01, 02, 03 - Salaries and Overtime

This includes salaries and overtime payments of field technicians and supervisors.

Object Group 04 - Travel

This group of costs includes field travel expenses for field personnel and other employees required for hydrometric survey work in the respective province.

Object Group 06 - Transportation

Included under this object group are costs for the transportation of goods and materials by truck, air, rail, and water.

Object Group 07 - Telecommunications

Expenses included within group are telephone services directly related to hydrometric operations.

Object Group 08 - Telecommunications

This group includes message and data services directly related to the hydrometric survey, excluding data processing costs which are considered separately below.

Object Group 11 - Professional Services

This object group includes salaries of gauge readers at hydrometric stations.

Object Group 15 - Other Services

This group includes costs associated with graphic services, short term employment, photographic services, brokerage fees, storage, printing, and department of Supply and Services service charges.

Object Group 16 - Rentals

(i) Includes rentals of aircraft, vehicles, boats and light machinery used for maintenance of gauging facilities.

(II) Annual cost of land leases for the establishment of or access to gauging stations (includes recorder shelters and cableways).

Object Group 17 - Repairs to Equipment

Repair and upkeep of such items as road motor vehicles, instrumentation, electrical equipment, survey equipment, snowmobiles, motor boats, ATV's, trailers, etc.

Object Group 18 - Building and Structure Repairs

This object group deals with all work done under contract toward the repair and upkeep of gauging facilities including shelter, stilling wells, cableways, weirs, flumes, bridges, stairways, access roads, etc.

Object Group 19 - Public Utility Services

Electrical services obtained through a public utility company.

Object Group 20 - Purchased Materials

Gasoline and oil for road motor vehicles is the major cost item in this cost group. Other costs include gas and oil for other motorized equipment, building materials, nitrogen for manometer stations, propane, working clothes and footwear, recorder charts, etc.

Object Group 21 - Parts and Consumable Tools

Includes items such as plumbing equipment and fittings, electrical equipment and fittings, batteries, scientific equipment, heating equipment, measuring equipment, safety equipment, hand tools, boats, rubber tires, etc.

Data Processing Costs

Up to and including 1983-84, all data processing was done using the main frame computer facilities located at Bedford Institute of Oceanography. For 1983-84 the data processing cost amounted to $25,000.

During 1983-84, a PDP 11/44 mini computer system was installed at the offices of Water Resources Branch, Dartmouth. For 1984-85 the new facility was completely operational.

In accordance with "Compendium of Practices, Interpretations and Administrative Procedures used by Co-ordinating Committee in Implementing the Water Quantity Survey Agreements", the annual computing cost would include the capital expenditure for the mini computer system, the annual operating cost (AOC) and the annual maintenance cost (AMC). The capital is recovered over a ten year period through an imputed rental charge (IRC), determined by amortizing the capital expenditure over a period of ten years. Therefore, the evolving formula would be:

Total Shareable Annual Computing Cost = IRC + AOC + AMC

If the Total Shareable Annual Computing Cost exceeds the cost for the base year, 1983-84, multiplied by the annual national cost increase factors, then the latter cost will be used. This has been the case for the years 1984-85 to 1989-90, therefore, the base year cost updated by the national cost increase factors, has been used.

In the Atlantic Region the Total Shareable Annual Computing Cost is proportioned among the four cost sharing agreements by the number of gauging station records processed.

Depreciation of Vehicles

Road motor vehicles in the Atlantic Region are now depreciated in accordance to the "Compendium of Practices, Interpretations and Administrative Procedures Used by Co-ordinating Committees in Implementing the Water Quantity Survey Agreements". By this compendium Report the Multi-Purpose Vehicles, Vans and trucks used in the Atlantic Region are depreciated over a term of six years from the original capital purchase cost.

To calculate this depreciation, the actual capital cost of the vehicle is divided by 72 months to give a monthly depreciation. The monthly depreciation is multiplied by the actual number of months that a vehicle served in a particular province, to give the annual depreciation for the vehicle.

Depreciation of Field Equipment and Instrumentation

Field equipment and instrumentation are depreciated at a rate of 10% of the current value of the cost-shareable inventory as determined once a year. Normally, only items acquired through capital purchases are included on the cost-shareable inventory.

II. THE OPERATIONAL COST OF SEDIMENT STATIONS

All cost items included in Section I except salaries, overtime and depreciation of vehicles, as they relate to Sediment Surveys, are included in the operational costs for the Sediment Network. Also included is the cost of laboratory analysis for suspended concentration and particle size distribution.

III. CONSTRUCTION AND MAJOR REPAIR COSTS FOR WATER QUANTITY SURVEY STATIONS

Once a major repair or new construction project has been identified, it is assigned a cost code to which all related costs are assigned. Some of this work is contracted out with the initial reconnaissance and the general supervision on-site provided by Water Survey of Canada.

If contracted out, the total cost is comprised of:

- Overtime of Water Survey of Canada supervisory personnel.
- Field travel expenses, board and lodging costs of supervisory personnel provided by Water Survey of Canada.
- If a pressure installation, the cost of the manometer and pressure unit accessory equipment such as gas and cylinders. The water level recorder is not charged.
- Charter aircraft.
- Land acquisition costs if any.
- Construction contract payments.

  Department of Supply and Services contract procedures are followed.

If constructed by Water Survey of Canada personnel, costs include:

- Overtime of Water Survey of Canada supervisory personnel.

- Field travel expenses, board and lodging costs of Water Survey of Canada staff. Expenses associated with reconnaissance and construction.

- If a pressure installation, the cost of the pressure unit and accessory equipment such as gas and cylinders.

- Construction materials - All items required for the construction of stilling wells, shelters, cableways, controls and survival shelters.

- Rental of aircraft, vehicles, boats, construction equipment associated with the project.

- Land acquisition costs if required.

- Construction contract payments - The services of construction equipment operators for backhoe and bulldozer are usually involved.

APPENDIX VI

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

a) The annual payment is composed of two parts, the annual operating costs and the costs of construction for streamflow and water level installations and sediment installations.

b) The annual payment shall be computed for each year the agreement is in effect.

c) Cost data to be used as a basis for computing each annual payment will be the cost data from the latest available full fiscal year.

d) A cost index factor is to be used in computing the annual payment for the year in question commensurate with sound engineering practice.

e) The average annual unit costs for operating water quantity survey stations listed in Schedule A but not including sediment stations will be determined from the cost data of c) above and where necessary, because of significant differences in transportation costs, these average annual unit costs will be computed for more than one area or condition of operation.

f) The total annual operation cost of the water quantity survey stations listed in Schedule A but not including sediment stations will be the summation of the appropriate average annual unit cost for each station multiplied by the cost index factor as determined in item d) above.

g) The total annual operation cost of the sediment stations listed in Schedule A will be the summation of the annual operating cost for each station multiplied by the cost index factor as determined in item d) above.

h) The construction cost to be apportioned in accordance with Articles II, III and IV will be the summation of the construction cost for each new, or reconstructed water quantity survey station. The entire cost of construction is to be included in the annual payment. Construction costs are to be determined using data from reconnaissance surveys, standard plans, etc. and incorporating the cost index factor from item d) above.

i) In cases where there is a significant deviation between the cost determined in (f), (g) and (h) and actual costs because of the cost index factor used, or changes in the construction program due to unforseen circumstances such as flooding, an adjustment may be made in the final quarterly payment (March 1st) or the next fiscal year to more accurately reflect the cost shares of the parties to this agreement.

APPENDIX VII

SCHEDULE D

SUMMARY OF ANNUAL PAYMENT

SCHEDULE D

This schedule provides a summary of the annual payment. The details of the calculations for operation and construction are available and have been jointly.reviewed by officers of each party.

ANNUAL PAYMENT FOR 1989-90 TO BE PAID TO THE RECEIVER GENERAL FOR CANADA BY THE PROVINCE OF PRINCE EDWARD ISLAND.

	Operation	Construction	Total
a) Streamflow and water level installations	$9,807	-	$9,807
b) Sediment installations	-	-	-
c) Groundwater installations	$2,691	-	$2,691
		ANNUAL PAYMENT	$12,498

William H. Howard
Executive Director, Prince Edward Island Department of Community and Cultural Affairs

Administrator for Province

S. L. Fenety
Director, Atlantic Region
Inland Waters/Lands

Administrator for Canada

APPENDIX VIII

MINUTES OF COORDINATING COMMITTEE MEETING

NOTE:

No annual co-ordinating committee was held during 1989-90. Following a post ponement of the meeting slated for March 1990 due to the concerns over the significant increases in technicians' salaries, agreement was reached on the schedule "A" and "D" for 1990-91 via telephone communications, thus eliminating the necessity for a formal meeting.

APPENDIX IX

ESTIMATED COSTS FOR 1990-91

WATER QUANTITY SURVEYS

PROVINCE OF PRINCE EDWARD ISLAND

1990-91

ESTIMATED OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technical staff including overtime)	$23,400
Transportation and Communication	
Travel and Removal - 04	1,500
Transportation and Postage - 06	200
Telecommunications - 07	NIL
Professional and Special Services	
Professional Services - 11	500
Other Services - 15	500
Rentals	
Rentals - 16	200
Purchased Repair and Upkeep	
Equipment Purchased and Repairs - 17	1,000
Building and Structures Repairs - 18	1,000
Utilities, Materials and Supplies	
Public Utility Services - 19	NIL
Purchased Materials - 20	3,500
Parts and Consumable Tools - 21	800
Other Costs - Data Processing Cost	1,500
- Depreciation of Vehicles	2,600
- Depreciation of Field Equipment and Instruments	1,400
TOTAL	$38,100

WATER QUANTITY SURVEYS

PROVINCE OF PRINCE EDWARD ISLAND

ESTIMATED PROVINCIAL SHARE

1990-91

Costs for Operating Hydrometric Stations

Designation of Stations	
F1	1
F4	3
FP2	7
FP3	3
	14

Average Cost per Station $38,100/14 = $2,721

Provincial Share ($2,721 x 5/2) + ($2,721 x 5/2 x 0.5) = $10,204

Costs for Processing Groundwater Charts

Processing Charge $320.00 per station

Cost for Nine Stations = 9 x 320 = $2,880

Total Provincial Cost

Water Quantity	$10,204
Groundwater	$ 2,880
TOTAL	$13,084

*Five of the four FP stations are operated as manual miscellaneous stations (0.5 unit cost)